

# Barriers to VCT for Vulnerable and Non-Vulnerable population at Risk of HIV

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## Abstract

This study had the objective to study obstacles to HIV VCT for vulnerable and non-vulnerable populations at risk of HIV. Data were collected in a cross-sectional survey conducted during May to July, 2013 in eight, purposively-selected provinces which are part of the 31 priority provinces of the NAP for 2012-16. Selection of the vulnerable population was conducted using time-location sampling and quota sampling, yielding a sample of 751 persons. Representatives of the non-vulnerable population were selected using probability proportional to size and cluster sampling, yielding 1,937 cases. This study found that, among those who ever had been tested for HIV before, the deterrents to intention to seek VCT in the coming year include lack of perceived self-risk for HIV, lack of knowledge of right to subsidized VCT, negative attitude toward VCT, and disrespectful service providers. Among those who had never had an HIV test, deterrents include lack of risk behavior, lack of being urged to go for testing, lack of information on VCT, and negative attitude. Thus, in order to increase coverage of VCT for populations vulnerable for HIV there should be interventions to increase accurate self-risk assessment, increased information about VCT and the right to subsidized services, and deployment of peer motivators to encourage testing for those with risk. MSM had lower coverage of VCT than other vulnerable groups. From this study, it is clear that negative attitude toward VCT affects VCT-seeking behavior. Thus, interventions are needed to modify attitudes toward VCT so people see the benefit of knowing one's serostatus, and enable those newly-infected to receive early treatment. Increasing coverage of VCT for the non-vulnerable population should not be that difficult. However there may be a need for a re-design of prevention interventions so they are more closely linked with treatment to ensure optimal initiation of treatment of the infected.

**Keywords:** HIV; VCT; Obstacles to service; Vulnerable and non-vulnerable populations for HIV

**Abbreviations:** HIV VCT: Voluntary Counseling and Testing for HIV; MSM: Men Who Have Sex with Men; KAPs: Key Affected Populations; PWID: People Who Inject Drugs (PWID); Female Sex Workers (FSW)

## Introduction

The HIV epidemic in Thailand has spanned 27 years since the first outbreak among Bangkok intravenous drug users in 1988. Following that outbreak, HIV spread throughout the country, predominately through unsafe sex with multiple partners. Continuous surveillance has tracked the rise, peaking and decline of HIV prevalence over nearly 30 years [1]. However, behavior surveillance suggests that the younger generation is adopting behaviors that could give rise to a resurgence of HIV spread. As a precursor indicator, sexually transmitted infection (STI) and unplanned pregnancy have increased among youth in the recent years. Reports show that the largest number of STI cases is among the population age 15-24 year and one-fifth of pregnancies and deliveries in 2008 were among women under age 20 year [2]. Between 2005 and 2008, the incidence of HIV among non-venue-based female sex workers (FSW) nearly doubled [3]. HIV prevalence among men who have sex with men (MSM) remains high and shows no sign of declining, especially for MSM in large cities and popular tourist destinations. For persons who inject drugs (PWID), HIV prevalence has plateaued at the high level of 30%. The Integrated Biological and Behavioral Surveillance (IBBS) surveys in 2010 and 2012 found that HIV infection remains high among vulnerable populations and having VCT in the past year and knowing the results is low, especially among MSM. Not knowing one's HIV+ status greatly increases the risk of transmission. Projections of the number of new cases of HIV (using the AIDS Epidemic Model computer software) indicate that, for the period from 2012 to 2016, it

is estimated that there will be 43,040 new HIV infections in Thailand. Infection among MSM and PWID account for 42% of this incidence, while heterosexual sex accounts for 32% [4].

VCT has also been shown to be a cost-effective HIV-prevention intervention. In Thailand, VCT services have been part of an aggressive and extensive HIV prevention program to control the spread of HIV, with VCT access a primary component of the program [5]. The government established confidential VCT services in all provincial and district hospitals starting in 1992 with a fee of US \$5. VCT was also provided by some non-governmental organizations (NGOs) and private practitioners. There has been a reluctance of people to seek VCT because of denial, the stigma and discrimination that people who test seropositive may face, and the lack of perceived benefits of testing. Concern about lack of confidentiality and long waiting time for test results discourages people from using VCT services. To overcome the barriers to establishing VCT services it is important to demonstrate its effectiveness and to challenge stigma and discrimination so that people are no longer reluctant to be tested [6,7].

In this report, we investigate the prevalence of VCT uptake, reasons

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for seeking and not seeking VCT, and barriers associated with VCT uptake among non-risk and risk populations.

## Methodology

### Study setting

The study was conducted in eight of the 31 focus provinces of the National AIDS Program (NAP) where the focus is on vulnerable populations (Thailand has 77 provinces in total). The eight provinces comprise two from each of four geographical regions (North, Northeast, Central and South). Provinces with higher HIV incidence were given priority and Bangkok was not included as a site in this study. Data were collected in the capital district of each province only.

### Study design and process

This study was a cross-sectional questionnaire-based survey which was conducted during May to July 2013. The eligibility criteria include age older than 18 years and willing to give informed consent to participate.

The study process included interviews using a structured questionnaire. The data include risk behavior (had sex without condom a person whose HIV status you didn't know since your last HIV test and injected drugs including steroids, hormones, or silicone and shared equipment or "works," such as needles or syringes with others., self-risk assessment for HIV (perception), whether the respondent was urged to go for HIV testing, VCT service factors, knowledge of benefits to access free VCT, attitudes toward VCT, stigma from others, self-stigma (refers to real or imagined fear of societal attitudes arising from a particular undesirable attribute, or association with a particular group or behavior (e.g. homosexuality, Sex worker and Substance use), and experience of discrimination. Study instruments were developed by a Thai expert and field-tested before use. The field data collection team was comprised of persons experienced in interviewing the populations of interest in this study.

For the vulnerable populations, time-location sampling (TLS) was used [8]. There were two stages in the sampling process. First, data were compiled on the places, times and numbers of the target population who gathered there. Next, these data were validated by double-checking with key informants or persons in the local community (e.g., to determine whether the listed entertainment establishments still in business, etc.). Next, sites were classified into venue-based and non-venue based (e.g., entertainment establishment, bar, sauna, massage salon, fitness salon, public spaces, roadsides, beauty salons, movie houses, etc.). Each of these locations might be populated by different types and numbers of the target population. Next, the researchers conducted quota sampling by screening individuals who met the inclusion criteria and agreed to participate in the study. Interviews were conducted until the quota number of respondents was met.

For factory workers, the researchers randomly selected large factories ( $\geq 200$  workers) in each sample province using probability proportional to size. Quota sampling was used to select the factory workers who met the inclusion criteria (Table 1).

### Data management and statistical analysis

The data collection teams conducted field editing of the questionnaires to ensure completeness, consistency and accuracy. After computerization, data entry and analysis was done using the CSPRO version 4.1 and SPSS software package programs. Statistical tests included Chi-Square and multiple logistic regression. All data were double entered and verified. Percent distributions, the Chi-square test, odds ratios (ORs), 95% confidence intervals (CIs), incidence rates, and logistic regression, were used for data analysis.

This study has been approved by the ethical review board for research on human subjects of Mahidol University. The researchers gave strong emphasis to assure respondents of the confidentiality of the data and the inability of anyone outside the interviewers to link the responses with the individual.

## Results

### General characteristics of the respondents

Of 2,770 eligible admissions, 2,689 (97% of those eligible) completed all the study procedures. The median age of the 752 members of vulnerable populations was 30 years; and the median age of 1,937 members of the non-vulnerable population was 31 years. Over half the sample of MSM were age under 25 years, and the sample includes students, the employed, and male sex workers. Most MSM preferred to be referred to as "gay." Most of the FSW were over 25 years old, and 85% said their primary source of income was commercial sex. Most of the PWID were age over 25 years and were employed. Two-thirds had at least high school education. The proportion of male and female factory workers in the sample was similar. Most workers under the age of 25 were female. About three-fourths had less than college education (Table 2).

### VCT experience and intention to get testing in the coming year

Overall, about half (51.6%) the vulnerable populations had been tested for HIV in the past year. One-fourth (28.6%) of the factory workers had been screened for HIV before, 8.3% in the past year, and one-fifth (21.6%) planned to have a test in the coming year. For MSM, 61.8% had ever test for HIV, 41.6% had test in the past year, and about half (49.5%) plan to go for VCT in the coming year. Among FSW, 85.6% had ever been tested for HIV, 68.3% in the past year, and nearly 80% intend to go for VCT in the coming year. For PWID about 87.0% had ever been tested and 60.0% had been tested for HIV in the past year.

Target population (TP)		Sampling Method	Sample selection	N collect	N complete
Populations vulnerable for HIV infection	MSM	Time location sampling (TLS) of sites where the TP congregates in 8 provinces	quota sampling; in each province equal numbers of the target population were sampled	350	317
	FSW	TLS of commercial sex establishments in 8 provinces		350	334
	IDU	TLS of sites where IDU congregate outside the clinical setting such as a DiC where present in 2 provinces.		120	101
Populations Non-vulnerable for HIV infection	Factory workers	Selection of large factories ( $\geq 200$ workers) in the province using probability proportional to size (PPS) in 8 provinces		1,950	1,937
<b>total</b>				<b>2,770</b>	<b>2,689</b>

Table 1: Target population, sampling method and size of the target population.

Sociodemographic Characteristics	FSW (n=334)		MSM (n=317)		PWID (n=101)		Total vulnerable populations (n=752)		FW (n=1,937)	
	n	%	n	%	n	%	n	%	n	%
Male					101	100.0	101	13.4	1096	56.6
Female	334	100.0					334	44.4	826	42.6
Other			317	100.0			317	42.2	15	0.8
Median Age	29.0		23.0		35.0		30.0		31.0	
< 25 Year	98	29.3	169	53.3	11	10.9	278	37.0	435	22.5
>= 25 Year	236	70.7	148	46.7	90	89.1	474	63.0	1,502	77.5
Primary School	108	32.3	11	3.5	23	22.8	142	18.9	288	14.9
Secondary School	175	52.4	180	56.8	61	60.4	416	55.3	653	33.7
Vocational school	17	5.1	30	9.5	10	9.9	57	7.6	502	25.9
Collage	5	1.5	75	23.7	1	1.0	81	10.8	456	23.5
Other	29	8.7	21	6.6	6	5.9	56	7.4	38	2.0

Table 2: Sociodemographic characteristics of participants.

Combined, about two-thirds (65%) of the vulnerable populations intend to go for VCT in the coming year. An additional one-fourth is needed to achieve the NAP target of 90% coverage for the year. It is notable that only half of the MSM intend to seek VCT and this is lower than FSW and PWID. Most MSM who did not plan to be tested said that they didn't have HIV risk behavior, while a smaller percentage said that no treatment for HIV infection, they were less concerned about their serostatus and fear others will know if result is HIV positive. Other reasons for not going for VCT include fear of AIDS and perceived inability to cope well with an HIV+ diagnosis, or fear that if others would know they were infected and they would be shunned. Most factory workers expected to be tested for HIV as part of their annual physical exam. Others had the confidence to be tested now that there is effective and affordable therapy. Thus, achieving the 10% target coverage of testing in the non-vulnerable population is within reach in the study area.

Among the vulnerable populations (307/484), a higher proportion 63.4% of those who had ever had VCT plan to be tested again in the coming year, compared with the never-tested. If countries want to

increase the coverage of the test for HIV infection, the results showed that it should be motivating MSM, FSW and PWID who have never been tested to seek VCT in the coming year which would require increasing the proportion planning to be tested from 12%, 7% and 8%, respectively, to 90% in the space of one year. By comparison, 11% of the never-tested factory workers intend to be tested for HIV in the coming year, and that would achieve the national target of 10%.

In summary, only one-tenth of the vulnerable populations who have never been tested for HIV intend to go for VCT in the coming year, but the majority of the vulnerable populations have been tested and know their serostatus (Figure 1).

### Factors inhibiting seeking VCT in the coming year

The data in Table 3 show the percent distribution of factors affecting intention to go for VCT in the coming year, and the variables included in the multiple logistic regression analysis, by population group. These variables were analyzed for their influence on intention to seek VCT in the coming year.

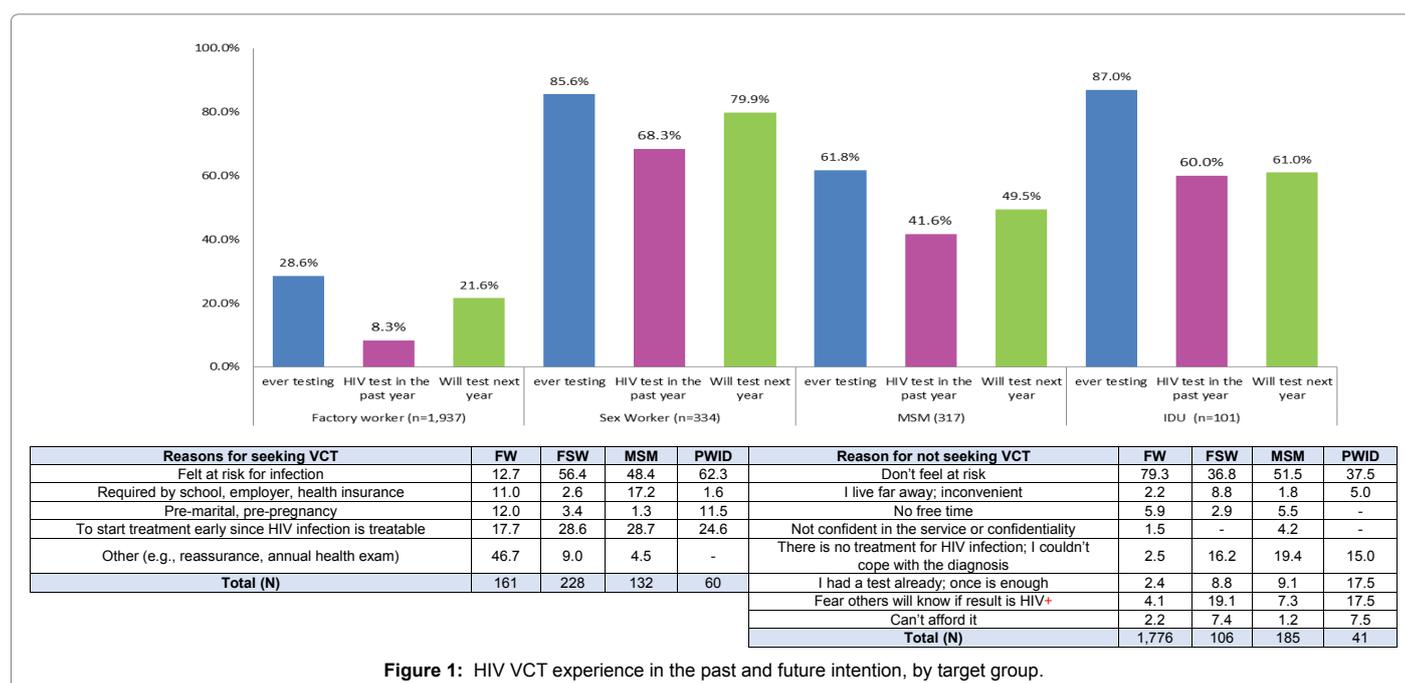


Figure 1: HIV VCT experience in the past and future intention, by target group.

Factor	FSW (n=334)		MSM (n=317)		PWID (n=101)		Total vulnerable populations (n=752)		FW (n=1,937)	
	n	%	n	%	n	%	n	%	n	%
No experience VCT in the past year	106	31.7	185	58.4	41	40.6	332	44.1	1,776	91.7
No risk behavior*	42	12.6	103	32.5	35	34.7	180	23.9	1,754	90.6
No risk for HIV**	222	66.5	81	25.6	33	32.7	336	44.7	1,545	79.8
No one urged to go for VCT	113	33.8	132	41.6	30	29.7	275	36.6	1,637	84.5
I don't know what VCT service is	82	24.6	111	35.0	19	18.8	212	28.2	1,195	61.7
I didn't receive information on VCT	64	19.2	90	28.4	26	25.7	180	23.9	991	51.2
I didn't know about my benefits rights	261	78.1	196	61.8	12	11.9	469	62.4	1,606	82.9
Negative attitude toward VCT	78	23.4	169	53.3	27	26.7	274	36.4	1,779	91.8
Stigma from others	94	28.1	223	70.3	46	45.5	363	48.3	1,152	59.5
Self-stigma***	222	66.5	149	47.0	47	46.5	418	55.6		
Ever experienced discrimination***	53	15.9	87	27.4	32	31.7	172	22.9		

**Table 3:** Factors affecting intention to Go For VCT in the coming year.

About two-thirds (469/752) of the vulnerable populations had not received information about their right to free VCT twice a year. Also, about half (336/752) did not perceive they were at risk for HIV (mostly FSW). One-fourth (180/752) had no risk behavior. One-third (275/752) had not had someone urge them to go for testing, and still had negative attitudes toward VCT. But more MSM displayed a negative attitude toward VCT than either the FSW or PWID.

Over half (418/752) the vulnerable populations reported experiencing self-stigma and/or discrimination from others. Most of the MSM reported stigma towards them by others, whereas more of the FSW experienced self-stigma. Less than half of the PWID reported self-stigma or stigma from others. FSW reported less discrimination against them than did MSM and PWID. Over half (1,152/1,937) of factory worker feel stigma from other.

Most MSM reported stigma, followed by lack of awareness of right to free VCT, negative attitude toward VCT, and self-stigma. Most of the FSW were not aware of their VCT rights, followed by lack of sense of risk for HIV, and self-stigma. Among PWID, most reported self-stigma, stigma from others, and experience of discrimination. Nevertheless, the barriers to seeking VCT in the coming year are fewer for PWID than for FSW and MSM.

Most (1,754/1,937) of the factory workers reported no risk behavior and (1,754/1,937) followed by negative attitudes toward VCT, (1,637/1,937) lack of someone urging them to go for testing, and (1,606/1,937) lack of knowledge about the right to free VCT, Also about 80% (1,545/1,937) did not perceive they were at risk for HIV. One-third (1,195/1,937) don't know what VCT service and Over half (991/1,937) had not received information about VCT.

The results of the Chi-Square test and multiple logistic regression analysis for the group of respondents who had been tested in the past year, compared with those who had not, show that there are significant differences in the influence of the variables on the outcome variable. Inhibiting factors for seeking VCT in the coming year for factory workers (FW), FSW, MSM and PWID who had ever been tested before include lack of perceived risk for HIV (FW : AOR=1.96 95%=1.03-3.75, MSM : AOR=3.97 95%=1.58-10.32), lack of knowledge of right to free VCT (FW : AOR=2.73 95%=1.35-5.54), cost of seeking the service (FSW : AOR=2.80 95%=1.75-8.34), negative attitude toward VCT (MSM : AOR=5.51 95%=1.99-15.2), and disrespectful service site (PWID : AOR=6.38 95%=1.01-40.29).

Among those who had never had an HIV test, the deterrents to

intention to go for VCT in the coming year include lack of risk behavior (FW : AOR=1.62 95%=1.10 - 2.38; MSM : AOR=2.99 95%=1.29 - 6.91), lack of being urged to go for testing (FW : AOR=2.39 95%=1.71-3.33, FSW : AOR=3.66 95%=1.11-12.04; MSM : AOR=2.19 95%=1.09 - 4.43), lack of information on VCT (FW : AOR=1.79 95%=1.39-2.30), and negative attitude toward VCT (FSW : AOR=7.02 95%=16.01 - 30.59, MSM : AOR=2.66 95%=1.32 - 5.39) (Tables 4 and 5).

## Discussion

Thailand has a policy of encouraging all Thais to know their HIV serostatus, and subsidizes the cost of two VCT service encounters per year [9]. At present, there is increased uptake at VCT sites [10]. But, based on this study, the coverage of VCT is still well below the target (90% for vulnerable populations). Furthermore, only 10% of the never-tested population intends to go for testing in the coming year. This implies that the newer cohort of the vulnerable groups are not being exposed to HIV testing as much as their older counterparts. By contrast, the factory workers are close (8.3%) to achieving the national target for the non-vulnerable population of 10% coverage with VCT (and over one-fifth intend to be seek VCT in the coming year). The main barrier to seeking testing in vulnerable populations who have never been tested is lack of risk behavior (MSM), lack of someone to urge them to go for testing (MSM & FSW), and negative attitude toward HIV testing (MSM & FSW). This study did not identify statistically significant inhibiting factors for VCT among PWID who had never been tested for HIV.

The main barriers to seeking testing in the members of the non-vulnerable population who had never been tested are lack of risk behavior, lack of knowledge of their right to free VCT, and lack of someone to urge them to go for testing. Barriers to seeking VCT in the factory worker population were similar for the HIV-vulnerable populations, and this is consistent with the limited experience of testing in the non-vulnerable population. This study did not find that stigma and discrimination were significant inhibiting factors to HIV VCT, and that finding is contrary to many other studies [11-14]. Even when the question is modified to conform to international studies there is still no distinct relationship with stigma of going for VCT and VCT-seeking behavior or intention. It is possible that the respondents in this study did not have a profound understanding of the terms stigma and discrimination. Instead, more powerful deterrents are the lack of perceived self-risk and lack of awareness of the need to begin treatment of HIV infection as soon as possible. Some vulnerable groups who had been tested reported poor service experience as a deterrent to future testing. Some complained about the cost (FSW), or the attitude of

Perceived Obstacle Who Were ever Tested in the Past Year	Factory Worker (n=161)			FSW (n=228)			MSM (132)			IDU (60)		
	Chi-square (P value)	Adjusted OR	95% CI	Chi-square (P value)	Adjusted OR	95% CI	Chi-square (P value)	Adjusted OR	95% CI	Chi-square (P value)	Adjusted OR	95% CI
1 No risk behavior (Ref: had risk behavior)	3.25 (0.065)			0.02 (0.461)			5.17 (0.000)			0.62 (0.352)		
2 No self-assessed risk for HIV (Ref: risk)	3.89 (0.001)	1.96	1.03-3.75	0.24 (0.318)			15.81 (0.000)	3.97	1.58-10.32	0.77 (0.271)		
3 Did not receive information about VCT (Ref: Received information)	2.34 (0.094)			1.28 (0.162)			2.01 (0.058)			0.27 (0.473)		
4 Did not know about benefits rights (Ref: Knows about benefits rights)	7.72 (0.000)	2.73	1.35-5.54	0.38 (0.312)			0.26 (0.329)			-		
5 Doesn't know about VCT (Ref: knows)	1.05 (0.274)			1.21 (0.183)			4.95 (0.000)			3.04 (0.063)		
6 No one urged to go for VCT (Ref: was urged)	2.26 (0.092)			2.77 (0.121)			0.94 (0.273)			4.25 (0.000)		
7 Negative attitude toward VCT (Ref: positive)	3.01 (0.069)			0.06 (0.427)			23.56 (0.000)	5.51	1.99-15.2	0.47 (0.273)		
8 Stigma by others (Ref: no stigma)	1.50 (0.121)			0.72 (0.361)			0.79 (0.351)			2.34 (0.071)		
9 Self-stigma (Ref: no self-stigma)	na	na	na	0.23 (0.244)			9.47 (0.021)			0.09 (0.671)		
10 Never discriminated against (Ref: discriminated)	na	na	Na	0.27 (0.092)			2.59 (0.056)			0.77 (0.173)		
11 Have to pay a fee (Ref: no fee)	2.94 (0.071)			4.74 (0.001)	2.80	1.75-8.34	2.85 (0.054)			0.62 (0.230)		
12 No special service hours (Ref: special hours)	na	na	na	0.22 (0.265)			2.16 (0.061)			0.32 (0.481)		
13 No confidentiality (Ref: confidentiality)	2.81 (0.069)			0.98 (0.195)			1.55 (0.084)			0.47 (0.730)		
14 Service site is disrespectful (Ref: respectful)	3.81 (0.052)			3.64 (0.098)			1.35 (0.091)			4.62 (0.000)	6.38	1.01-40.29
15 Service is different from that of others (Ref: no differential service)	na	na	na	1.92 (0.101)			0.01 (0.472)			3.76 (0.010)		
16 Not satisfied with the service (Ref: satisfied)	0.11 (0.216)			2.12 (0.092)			1.70 (0.069)			0.35 (0.581)		
17 Difficult to travel to (Ref: not difficult)	0.15 (0.152)			5.66 (0.016)			3.15 (0.051)			3.91 (0.001)		

**Table 4:** Perceived obstacles to going for VCT in the coming year by those who were ever tested in the past year by logistic regression.

the service provider (PWID), and these findings are consistent with previous studies. Since 2002, Thai policy discontinued separate clinics for FSW and included them in the non-vulnerable population service system. While this may have reduced stigma, it presented an increased cost of service for FSW [15].

Among MSM both had HIV testing and never, the result indicate that the main barriers to seeking testing were negative attitude toward VCT (getting tested for HIV will not help people get prevention and early treatment). According to many studies show that knowing one's serostatus and ART prophylaxis are the most effective prevention methods for PLHIV at present [16]. ART is both treatment and prevention (i.e., PMTCT) since the ART reduces the viral load of the PLHIV and, therefore, reduces ability to transmit the virus (preventive efficacy of at least 90%) [17,18]. Since HIV infection is not yet curable, prevention is still an essential public health intervention [18,19]. One approach to cure that is being investigated is very early ART after infection when the viral load is still low. The problem is that most PLHIV do not know exactly when they become infected, and usually find out only when they develop symptoms of opportunistic infections (OIs) [4]. In the past two to three years, there have been many studies

published which used ART as prophylaxis among the uninfected with high risk of infection [20,21].

The NAP strategy for 2012-16 is consistent with UNAIDS goals, i.e., to reduce new HIV infections by two-thirds from the projected total, and reduce neonatal infection to under two percent. All Thais have access to quality HIV care on an equal basis, and AIDS mortality has been cut in half. To achieve the goals, the population must become accustomed to the idea that HIV infection is a manageable disease and not as lethal as in the past with use of the latest regimen of ARV drugs which reduce viral load and eliminate OIs, so that PLHIV can lead relatively healthy and normal lives, just as the uninfected do. A numerous of studies have found that, when treating at-risk persons such as MSM, PWID or the HIV-negative member of a discordant couple with monotherapy, the risk of infection is significantly reduced (40% to 50% efficacy). However, this intervention is usually coupled with instructions for consistent condom use [14,22,23]. The infected who receive early diagnosis and treatment can expect to lead just as long lives as the uninfected. All Thais can access free ART if needed through the universal health insurance scheme which advertises that treatment is prevention, but

Perceived Obstacle Who Were Never Tested in the Past Year	FW (n=1,776)			FSW (n=106)			MSM (185)			IDU (41)		
	Chi-square (P value)	Adjust OR	95% CI	Chi-square (P value)	Adjust OR	95% CI	Chi-square (P value)	Adjust OR	95% CI	Chi-square (P value)	Adjust OR	95% CI
1 No self-assessed risk for HIV (Ref: risk)	2.04 (0.063)			1.51 (0.154)			1.07 (0.312)			2.30 (0.061)		
2 No risk behavior (Ref: had risk behavior)	6.18 (0.019)	1.62	1.10-2.38	2.95 (0.073)			14.19 (0.000)	2.99	1.29-6.91	0.29 (0.233)		
3 Did not receive information about VCT (Ref: Received information)	9.82 (0.001)			2.44 (0.081)			3.54 (0.053)			1.11 (0.089)		
4 Did not know about benefits rights (Ref: Knows about benefits rights)	13.92 (0.000)			0.55 (0.236)			0.07 (0.063)			0.32 (0.263)		
5 Doesn't know about VCT (Ref: knows)	32.31 (0.000)	1.79	1.39-2.30	8.27 (0.016)			7.07 (0.001)			2.06 (0.063)		
6 No one urged to go for VCT (Ref: was urged)	44.99 (0.000)	2.39	1.71-3.33	16.57 (0.000)	3.66	1.11-12.04	10.99 (0.000)	2.19	1.09-4.43	2.30 (0.061)		
7 Negative attitude toward VCT (Ref: positive)	1.51 (0.091)			17.59 (0.000)	7.02	16.01-30.59	13.67 (0.000)	2.66	1.32-5.39	2.74 (0.053)		
8 Stigma by others (Ref: no stigma)	0.06 (0.529)			0.01 (0.681)			4.93 (0.021)			0.75 (0.284)		
9 Self-stigma (Ref: no self-stigma)	na	na	Na	3.64 (0.165)			5.83 (0.001)			0.73 (0.167)		
10 Never discriminated against (Ref: discriminated)	na	na	na	0.01 (0.492)			0.40 (0.547)			0.77 (0.153)		

**Table 5:** Perceived obstacles to going for VCT in the coming year by those who were never tested in the past year by logistic regression.

requires early diagnosis and treatment. In this way HIV incidence and AIDS mortality can be reduced even further, especially as HIV testing becomes a norm in society, e.g., as part of the annual physical exam [2]. Still, AIDS program managers need to find ways to reach more of the vulnerable populations to provide information and motivation for VCT.

Increasing coverage of VCT for the vulnerable populations in order to reach the target will require efforts to promote accurate self-risk assessment, needed to modify attitudes so that people see the benefit of knowing one's serostatus and early diagnosis and treatment if infected and motivation to go for VCT by these populations.

The 10% VCT coverage target for the non-vulnerable population is more feasible. However, there should be a re-design of the NAP strategy so that prevention is linked with treatment to ensure that those whose infection is detected can immediately enroll in treatment programs to maintain their health and prevent transmission to others.

### Limitations of the Study

This study collected data from only one urbanized district of eight of Thailand's 77 provinces. These were provinces with higher levels of reported HIV incidence and were a subset of the 31 focus provinces of the NAP. Thus, the sample is probably not representative of the rest of the country, especially the more rural areas. Similarly, health services and access are different between urban and rural areas. Using only factory workers are a representation of the non-vulnerable populations for HIV infection. Data were collected by self-administered questionnaire and this could introduce bias if there was misunderstanding of certain questions or lead to exaggerated/incomplete response, especially about sex behavior and risk. There could also be recall bias for items asking about events in the past year. Finally, because the selected provinces were sites for intensified intervention to promote VCT, it is possible that history of VCT among the sampled population is higher than in non-focus provinces.

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